

DRAFT FINAL

FOCUSED FEASIBILITY STUDY

UPRIVER DAM PCB SEDIMENTS SITE

Prepared for
Avista Development, Inc.
and
Kaiser Aluminum & Chemical Corporation

For Submittal to
Washington Department of Ecology

Prepared by
Anchor Environmental, L.L.C.
1423 Third Avenue, Suite 300
Seattle, Washington 98101

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List of Acronyms and Abbreviations

µg/kg	micrograms per kilogram
µg/L	micrograms per liter
AET	apparent effects thresholds
ARAR	applicable or relevant and appropriate requirement
Avista	Avista Development, Inc.
CAD	Contained aquatic disposal
CAP	Cleanup Action Plan
CDF	confined disposal facility
CFR	Code of Federal Regulations
cfs	cubic feet per second
CLARC	Cleanup Level and Risk Calculation
cm	centimeters
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
CY	Cubic yard
DGPS	differential global positioning system
dw	dry weight
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
FS	Feasibility Study
HPA	Hydraulic Project Approval
Kaiser	Kaiser Aluminum & Chemical Corporation
kg OC/m ²	kilograms organic carbon per square meter
L/KG	liters per kilograms
MCUL	Minimum Cleanup Level
MNR	Monitored natural recovery
MTCA	Model Toxics Control Act
PCB	polychlorinated biphenyls
pcf	pounds per cubic foot
pg/L	picograms per liter
RCW	Revised Code of Washington
RI/FS	Remedial Investigation/Feasibility Study
RM	River mile



List of Acronyms and Abbreviations

RTDF	Remediation Technologies Development Forum
SEPA	State Environmental Policy Act
Site	Upriver Dam PCB Site
SMS	Sediment Management Standards
SPI	sediment profile imaging
SPM	suspended particulate matter
SQS	Sediment Quality Standards
SQV	Sediment quality value
TMDL	Total Maximum Daily Load
TOC	total organic carbon
USC	U.S. Code
WAC	Washington Administrative Code



1 INTRODUCTION

Effective February 6, 2003, the Washington State Department of Ecology (Ecology) entered into a Consent Decree with Avista Development, Inc., a subsidiary of Avista Corporation (Avista), and Kaiser Aluminum & Chemical Corporation (Kaiser). The Consent Decree sets forth requirements for completing a focused Remedial Investigation/Feasibility Study (RI/FS) of polychlorinated biphenyls (PCBs) in sediments at the Upriver Dam PCB Site (Site). The Site study area begins at approximately river mile (RM) 80.0 at Upriver Dam and continues to approximately RM 85.0 upstream of the dam near the Centennial Trail footbridge (Figure 1). The Site is in the County of Spokane, Washington.

1.1 Remedial Investigation Summary

As described in the Draft Final RI Report (Anchor 2004), a considerable amount of water column and sediment quality data have been collected at the Site to characterize the nature and extent of PCBs in the Upriver Dam area. The primary conclusions of the RI can be summarized as follows:

- Surface water total PCB concentrations measured at the Site during low flow conditions during early September 2003 (500 cubic feet per second [cfs] measured at the Spokane gage), reached a maximum concentration of at least 120 picograms per liter (pg/L; U.S. Environmental Protection Agency [EPA]-blank qualifying method results) at Boulder Beach (RM 82.0). Based on EPA-method blank-qualified results, surface water PCB concentrations measured at the Site were below the current surface water quality standard (Chapter 173-201A) of 170 pg/L, though samples collected during September at Boulder Beach and at the Upriver Dam forebay (RM 79.8) exceeded EPA's (2002) recommended water quality criterion for total PCBs of 64 pg/L and alternative blank adjustment method indicates that concentrations were greater than 170 micrograms per liter (µg/L). Surface water total PCB concentrations throughout the Site during approximately median flow conditions in mid-December 2003 (4,000 cfs at the Spokane gage) were less than 30 pg/L, based on EPA qualified results.
- Increases in surface water PCB concentrations in the Site area, relative to more upstream sampling locations, were attributable at least in part to specific congeners (especially PCB 11) apparently associated with treated wastewater from the Inland Empire Paper Company outfall. In addition, increases in bottom water

- concentrations of certain PCB homologue groups near the dam forebay were potentially attributable to sediment-associated releases from deposits near the dam (primarily between RM 80.1 and 80.6; see below), though uncertainties associated with low-level PCB analyses and the degree of water column stratification and mixing in this area precluded more definitive source and mass balance analyses.
- Groundwater PCB concentrations were similar to surface water concentrations measured near the dam, and consistent with the site conceptual model verified by local hydrogeologic data of river discharge (exfiltration) to the aquifer in the vicinity of the dam pool. While PCBs were detectable in groundwater, measured concentrations were approximately 3 orders of magnitude below the current drinking water maximum contaminant level.
 - On an area-wide basis, averaged surface sediment (0 to 10 centimeters [cm] below mudline) total PCB concentrations throughout most of the Upriver Dam area were typically less than 33 micrograms per kilogram dry weight ($\mu\text{g/kg dw}$), below the range of risk-based sediment screening levels (roughly 60 to 320 $\mu\text{g/kg dw}$; Michelsen 2003, Anchor 2004; see below). Sediment PCB concentrations exceeding the screening level range have been identified in two separate sediment deposits at the Site:
 - **Deposit 1** – approximately 3.7 acres in deep-water (20 to 25 feet below normal pool level) zones near Upriver Dam (approximately RM 80.1 to 80.6), containing surface sediment (0 to 10 cm) PCB concentrations as high as 1,430 $\mu\text{g/kg dw}$. Approximately 13,600 cubic yards (CY) of sediment in Deposit 1 contain PCB concentrations exceeding 60 $\mu\text{g/kg dw}$, equating to an average thickness of 2.3 feet (70 cm; see Figure 2).
 - **Deposit 2** – a smaller shallow water area on north bank side channels near Donkey Island (RM 83.4), containing surface sediment PCB concentrations as high as 330 $\mu\text{g/kg dw}$ (based on RI sample AN-40 [0 to 10 cm]). The estimated area of sediment with PCB concentrations exceeding 60 $\mu\text{g/kg dw}$ is roughly 0.2 acres. Assuming a nominal thickness of 1 foot, the estimated volume of sediment in Deposit 2 that exceeds 60 $\mu\text{g/kg dw}$ is about 300 CY.

The approximate extent of PCB-contaminated sediments in Deposits 1 and 2 is delineated in Figure 1.

The site characterization data available for the Upriver Dam PCB Site also include several high-resolution and radioisotope-dated cores collected within Deposit 1 (Figure 2; Hart Crowser 1995, Exponent and Anchor 2001). The coring data were consistent between sampling stations located within the 3.7-acre deposit, and defined a pronounced vertical profile of PCB concentrations within the sediments. Sediment total PCB concentrations peaked at depths approximately 20 to 40 cm (8 to 16 inches) below mudline, decreasing steadily in shallower intervals. This vertical profile of PCB concentrations is typical of aquatic sites in the United States. Following the restriction and eventual ban on the manufacture and use of PCBs in the 1970s, PCB levels in surface water discharges decreased. As a result, sediments containing elevated PCBs have been overlain and buried with cleaner sediments. The RI data indicate that this process, referred to as natural recovery, is occurring in sediments located behind Upriver Dam, with net sedimentation rates in the four cores ranging between approximately 0.4 and 1.0 cm/year (Hart Crowser 1995, Exponent and Anchor 2001). Moreover, the pronounced stratification/layering apparent in PCB concentrations and the radioisotope record at Deposit 1 suggests that such subsurface sediments have been generally stable over time, with no indication of substantial, deep, or widespread periodic scouring and remobilization.

Dec 03, 2004 10:19am cdauidson K:\Jobs\020073-Upriver\02007301\02007301-29.dwg FIG 1 FS



Notes:

- 1) Aerial photo provided by Avista dated June 2002.
- 2) Bathymetry based on survey data provided by Blue Water Engineering dated May 20-22, 2003.
- 3) Horizontal Datum: State Plane NAD83 Washington, North
- 4) Vertical Datum: NAVD88

Sample Locations

- Core Station Location (2003)
- Surface Sediment Station Location (2003)
- Grab Sample Location (2004)

- Deposit 1
- Deposit 2

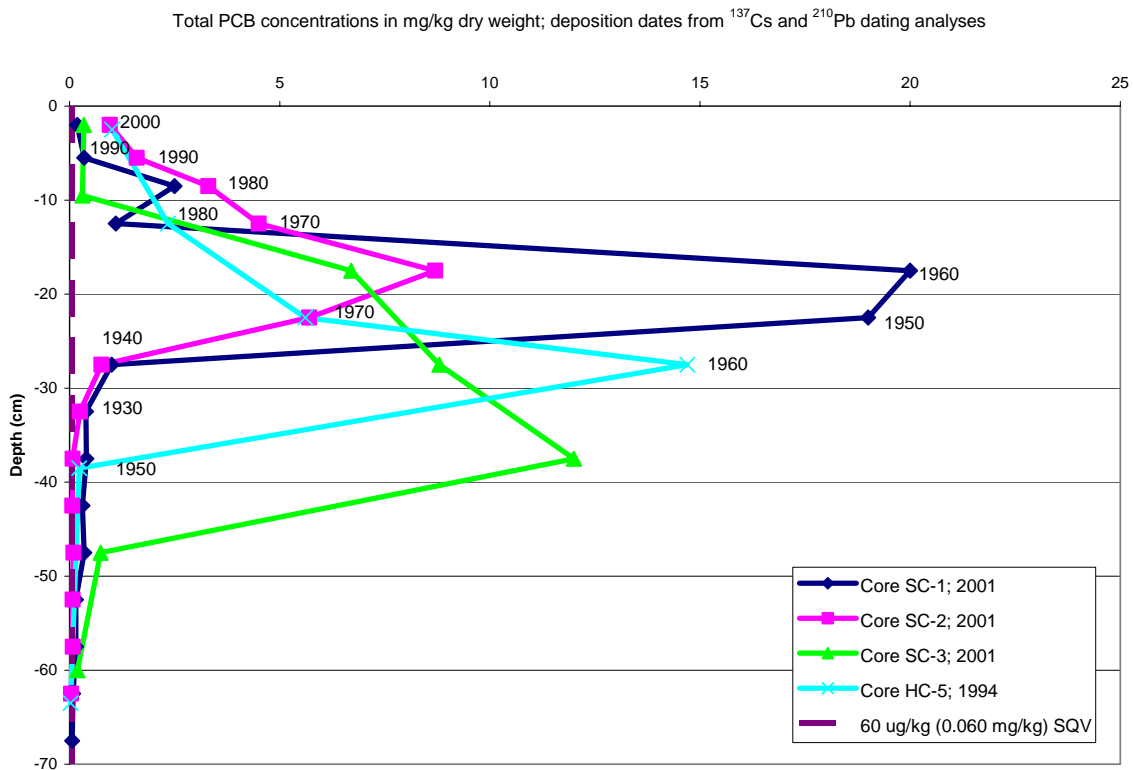


Figure 2
Depth Variation of PCBs in Deposit 1 Sediments Above Upriver Dam

1.2 Focused Feasibility Study Overview

Consistent with Model Toxics Control Act (MTCA; Chapter 173-340 Washington Administrative Code [WAC]) and Sediment Management Standards (SMS; Chapter 173-204 WAC) requirements, the purpose of the FS is to identify and evaluate potential alternatives for cleanup of Site sediments. A range of preliminary sediment remediation options have been developed with Ecology, and evaluated with respect to effectiveness, implementability, cost, and other MTCA/SMS criteria. As directed by Ecology, potentially feasible alternatives were carried forward for more detailed evaluation in this Focused FS, consistent with remedial action objectives developed for the Site. Each alternative was developed to achieve prospective cleanup standards, though the alternatives use different remedial technologies and process options to accomplish this objective. The overall FS evaluation is intended to provide sufficient data and engineering analysis to enable Ecology to select a cleanup action that is protective of human health and the environment.

The Focused FS presented in the sections below build upon the considerable site characterization data collected to date, as summarized in Anchor (2004), which has been incorporated into the existing administrative record for the Site. Remedial alternatives are developed in the sections below using technologies retained from the initial screening of technologies. The identification and assembly of cleanup technologies into site-wide alternatives was performed in accordance with MTCA regulations and associated guidance (e.g., SMS User Manual), along with additional direction provided by Ecology. Each alternative was developed to achieve prospective cleanup standards at the Site (Ecology does not select cleanup standards prior to issuance of the Cleanup Action Plan [CAP]), although the alternatives use different remedial technologies and strategies to accomplish this objective. Detailed analysis of each of the alternatives relative to MTCA evaluation criteria is presented in subsequent sections of this Focused FS Report.

The remainder of this report is presented as follows:

- Section 2 summarizes cleanup standards considered for the Site.
- Section 3 presents a summary of applicable federal, state, and local laws.
- Section 4 presents an initial screening of cleanup technologies.
- Section 5 presents a description of the cleanup alternatives retained for detailed evaluation.
- Section 6 evaluates the alternatives against MTCA criteria for cleanup actions.
- Section 7 presents the references cited in this FS Report.

2 CLEANUP STANDARDS

Consistent with the conceptual site model developed for the Site (Anchor 2004), along with Ecology and EPA regulatory guidance, this Focused FS considered four interrelated remedial action objectives for the Upriver Dam Site:

1. Control of benthic exposure to PCB-contaminated sediments located within the biologically active sediment zone (defined in the RI as 0 to 10 cm below mudline).
2. Minimization of benthic exposure to PCB-contaminated subsurface sediments (i.e., located more than 10 cm below mudline), considering sediment stability under potential future conditions.
3. Reduction of potential remobilization of PCB-contaminated sediments by hydraulic or other physical processes.
4. Reduction of potential transport (flux) of PCBs into the overlying water column.

These remedial action objectives, in turn, were used to develop prospective cleanup requirements for the Upriver Dam Site. Under MTCA, cleanup standards include three components: 1) cleanup levels; 2) points of compliance; and 3) applicable or relevant and appropriate requirements (ARARs). Potential cleanup levels and associated points of compliance were developed for the Site following MTCA Cleanup Regulations (Chapter 173-340 WAC). MTCA Method B procedures, which were used in this Focused FS, employ a risk-based evaluation of potential human health and environmental exposures to Site contaminants. As defined in the MTCA regulation, cleanup levels must also be at least as stringent as established state or federal standards or other laws (i.e., ARARs) developed for human health and environmental protection (see Section 3).

The Method B cleanup level for one medium must also be protective of the beneficial uses of other affected media. For example, since sediment porewater could potentially contribute to surface water PCB flux at the Upriver Dam Site, sediment cleanup levels need to consider surface water and groundwater protection requirements. Sediment cleanup screening levels and surface water protection considerations are discussed separately in the sections below.

2.1 Sediment Screening Levels

MTCA addresses sediment cleanup levels by reference to the SMS. Under the SMS, the primary endpoint for sediment quality evaluations is protection of the environment,

specifically the benthic community within the biologically active zone (0 to 10 cm), from adverse effects associated with contaminants. Numeric freshwater sediment quality values (SQVs) for a range of chemicals are still under development by Ecology, though interim guidelines have been released based on probable or apparent effects thresholds (AETs) calculated using the available regional database of synoptic chemistry and toxicity test information (Michelsen 2003). While SMS cleanup levels have been promulgated for sediments in the marine environment, freshwater sediment quality criteria are currently determined on a case-by-case basis (Chapter 173-204-340 WAC).

Sediment quality screening values considered in this Draft FS included the following:

1. Potential for localized toxicity to benthic invertebrate organisms – Ecology’s most recent evaluation of SQVs for use in its freshwater sediment management programs is presented in Michelsen (2003), including updates of existing freshwater AETs and evaluations of other SQV measures that may provide improved reliability. Based on Michelsen’s recommendations, Ecology is currently considering potential freshwater toxicity-based SQVs ranging from 60 µg/kg dw (floating percentile method at 85 percent sensitivity) to 354 µg/kg dw (second lowest AET). Although site-specific bioassays can be performed to provide a more direct assessment of sediment toxicity, at the Upriver Dam Site this is significantly complicated by the presence of co-occurring metal and wood waste contaminants, which are not addressed under the Upriver Dam PCB Site Focused RI/FS (Anchor 2004).
2. Potential risks to wildlife and human health due to PCB uptake and bioaccumulation – Detailed bioaccumulation studies at other similar freshwater and marine sediment PCB sites have evaluated average surface sediment concentrations across the characteristic home range of the resident biota. As discussed in Anchor (2004), representative applications of sediment bioaccumulation modeling at other sediment PCB cleanup sites have resulted in bioaccumulation-based SQVs ranging from approximately 320 to 1,000 µg/kg dw.

For the purposes of this Focused FS the more conservative of the range of SQVs presented above (i.e., 60 µg/kg dw) was used as a preliminary basis for evaluating prospective remedial action areas at the Upriver Dam PCB Site. The approximate areal extent of contiguous sediments in Deposits 1 and 2 that exceed 60 µg/kg dw is delineated in Figure 1.

As discussed above, the SMS default point of compliance for sediment cleanup standards is the 0 to 10 cm depth interval below the mudline. Radioisotope dating evaluations (Hart Crowser 1995, Exponent and Anchor 2001) support that the biologically active zone at the Upriver Dam PCB Site does not extend across the 10 cm interval, and in several cores is limited to the 0 to 4 cm interval. Existing sediment contamination at the Site (i.e., metals, PCBs, and wood waste) may potentially limit the effective depth of biologic activity. Use of a default 0 to 10 cm point of compliance in the sediment cleanup standard provides an additional level of protectiveness to address potential future improved conditions at the Site.

2.2 Surface Water Screening Levels

The MTCA Method B surface water cleanup level considers Chapter 173-201A WAC requirements, as well as federal Clean Water Act (CWA) aquatic life and human health criteria, National Toxics Rule aquatic life and human health criteria (40 CFR 131.36), federal Drinking Water Standards and Health Advisories, and the State Primary Drinking Water Regulations (Chapter 246-290 WAC). Human health risk calculations for reasonable maximum surface water exposures (including bioaccumulation and drinking water pathways) were performed using the standard MTCA Method B risk equations.

Consistent with the summary provided in Ecology's current Cleanup Level and Risk Calculation (CLARC) tables, version 3.1, the proposed Method B surface water screening level for PCBs is based on the Chapter 173-201A and current National Toxics Rule ARAR for human health protection of 170 pg/L. Based on the MTCA risk assessment equations, this ARAR provides sufficient human health and environmental protection. Also note that the ambient water quality standard for the protection of aquatic life from chronic PCB exposure (14,000 pg/L), as well as the drinking water maximum contaminant level (500,000 pg/L), are both considerably less stringent than the bioaccumulation-based Method B cleanup level.

While the current National Toxics Rule surface water quality criterion of 170 pg/L provides one basis for developing the Method B cleanup level, Ecology is also considering a second value that could be applied as the MTCA surface water quality standard at the Upriver Dam PCB Site. That is, EPA (2002) recommends that the surface water quality criterion for PCBs

be lowered to 64 pg/L, and this value may potentially be used under MTCA as the Method B cleanup level (WAC 173-340-730[2][b][i][B]) and -730[3][b][i][B]). For the purposes of this Focused FS the more conservative of these values (i.e., 64 pg/L) was used as a preliminary basis for evaluating prospective remedial action requirements at the Upriver Dam PCB Site.

As discussed above, surface water total PCB concentrations measured at the Site during low flow conditions in early September 2003 (500 cfs) exceeded the 64 pg/L criterion at Boulder Beach (RM 82.0) and at the Upriver Dam forebay (RM 79.8). However, surface water total PCB concentrations observed at the Site monitoring locations and calculated according to the EPA blank-qualifying method during approximately median flow conditions in mid-December 2003 (4,000 cfs) were less than 30 pg/L, and did not exceed the EPA (2002) recommended value. Increases in surface water PCB concentrations in the site area, relative to more upstream sampling locations, were likely attributable at least in part, to specific congeners (especially PCB 11) apparently associated with treated waste water from the Inland Empire Paper Company outfall. In addition, increases in bottom water concentrations of certain PCB homologue groups near the dam forebay were potentially attributable to sediment-associated releases from deposits near the dam (primarily between RM 80.1 and 80.6), though uncertainties associated with low-level PCB analyses and the degree of water column stratification and mixing in this area precluded more definitive source and mass balance analyses.

Under MTCA, the point of compliance for documenting protection of human health and the environment resulting from potential surface water exposures is within (and throughout) the water column of the Spokane River (WAC 173-340-730[6] and [7]). Surface water samples collected during the RI at water depths several feet above the mudline serve in part to address this point of compliance, as discussed above.

For the purpose of supporting a comparative evaluation of the protectiveness of alternative remedial actions within the Upriver Dam Site (see Section 6), sediment porewater PCB concentrations at a depth of 10 cm below the mudline were estimated and compared with the 64 pg/L criterion. The 10 cm depth represents a conservative point of release into the biologically active zone. While this comparison does not represent a potential bioaccumulation exposure or point of compliance condition (considering the broad home

range behavior of fish in this system), such a comparison is nevertheless useful for evaluating the relative protectiveness of different remedies, consistent with MTCA regulatory guidance. Based on detailed core profiling data for PCBs and total organic carbon (TOC) available for the Site (see Figure 2), and applying the equilibrium partitioning model recommended in the MTCA regulation (i.e., an equilibrium partitioning coefficient [K_{oc}] for total PCBs of 820,000 liters per kilograms [L/kg]), the profile of existing porewater PCB concentrations with depth in Deposit 1 can be estimated (Figure 3).

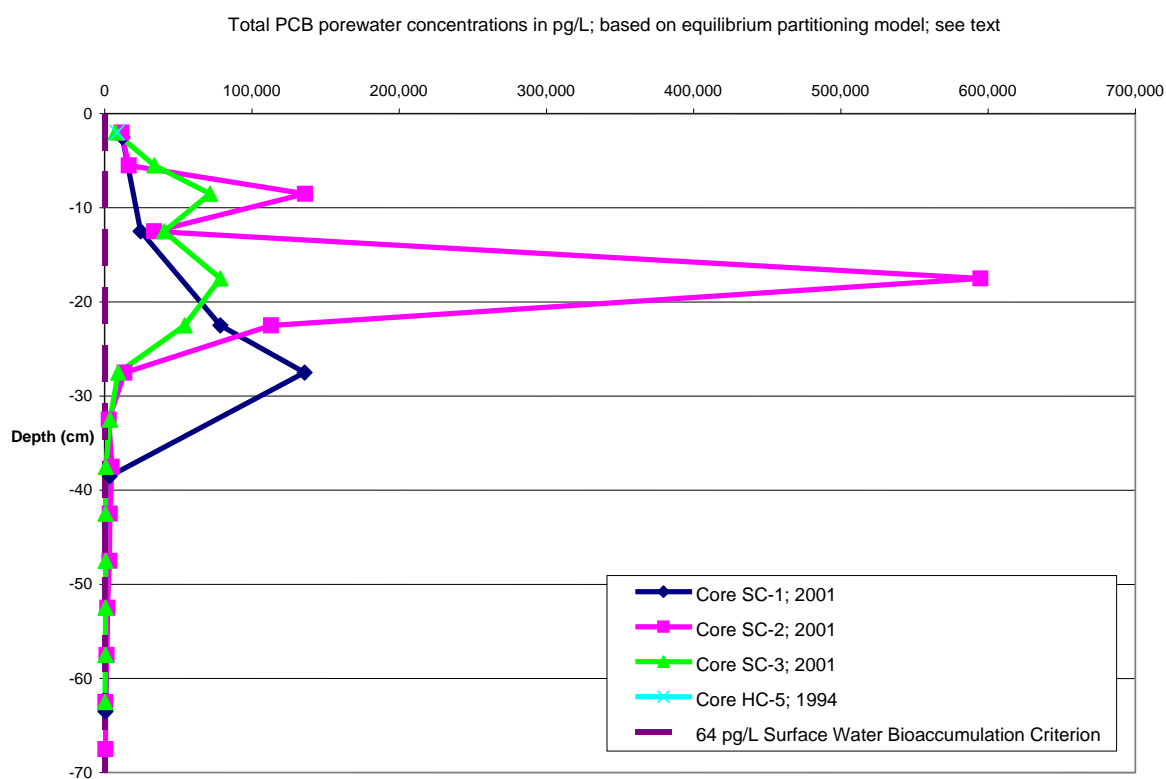


Figure 3

Depth Variation of Predicted Porewater PCB Concentrations in Deposit 1 Sediments

As summarized in Figure 3, calculated porewater concentrations near the sediment surface (i.e., at a depth of 10 cm below the mudline) currently range from approximately 2 to 3 orders of magnitude above the 64 pg/L criterion, and thus could potentially be a (currently unquantified) source of PCBs to the overlying water column. However, porewater concentrations decline 1 to 2 orders of magnitude over the top 20 to 30 cm (8 to 12 inches) of

sediment, suggesting that remedies that provide for further sediment confinement may be effective in controlling potential porewater releases.



3 APPLICABLE FEDERAL, STATE, AND LOCAL LAWS

Many environmental laws may apply to a cleanup action. In addition to meeting MTCA cleanup standard requirements, a cleanup action must also meet the environmental standards set forth in other applicable laws. Though a cleanup action performed under formal MTCA authorities (e.g., a Consent Decree) is exempt from the procedural requirements of certain state and local environmental laws, the action must nevertheless comply with the substantive requirements of such laws. Potentially applicable federal, state, and local laws that may impact the implementation of remedial actions at the Site are summarized below.

3.1 Federal Requirements

Potential federal requirements are specified in several statutes, codified in the U.S. Code (USC), and regulations promulgated in the Code of Federal Regulations (CFR), as discussed in the following sections.

The **Clean Water Act** (CWA) (33 USC Section 1251 *et seq.*) requires the establishment of guidelines and standards to control the direct or indirect discharge of pollutants to waters of the United States. Section 304 of the CWA (33 USC 1314) requires the EPA to publish Water Quality Criteria, which are developed for the protection of human health and aquatic life. Federal water quality criteria are published as they are developed, and many of them are included in Quality Criteria for Water 1986, EPA 440/5-86-001, May 1, 1986 (51 FR 43665), commonly known as the "Gold Book." Publications of additional criteria established since the Gold Book was printed are announced in the Federal Register. Federal water quality criteria are used by states, including Washington, to set water quality standards for surface water.

Discharges of Pollutants into Navigable Waters are regulated under Sections 401 and 404 of the CWA (33 USC 1341 and 1344), 40 CFR Part 230 [Section 404(b)(1) guidelines], 33 CFR Parts 320 (general policies), 323 and 325 (permit requirements), and 328 (definition of waters of the United States). These requirements regulate the excavation of shoreline materials and the placement of fill material (including caps) below the ordinary high water elevation of waters of the United States. The 401/404 regulations are implemented by the U.S. Army Corps of Engineers (Corps) and EPA. Under the Section 404(b)(1) guidelines, 40 CFR 230.10(b), no discharge (i.e., excavation or cap) shall be allowed if it:

- Causes or contributes to violations of water quality standards, pursuant to Section 401 of the CWA, after consideration of local dilution and dispersion.
- Violates any applicable toxic effluent standard or discharge prohibition under Section 307 of the CWA.
- Jeopardizes the continued existence of any endangered or threatened species, or contributes to the destruction or modification of any critical habitat for such species.
- Violates any requirement imposed by the Secretary of Commerce to protect sanctuary areas.

The guidelines in 40 CFR 230.10(c) also provide that no discharge will be authorized that contributes to significant degradation of the waters of the United States. Where there is no practicable alternative to a discharge, 40 CFR 230.10(d) requires the use of appropriate mitigation measures to minimize potential adverse impacts of the discharge on the aquatic ecosystem. The term "practicable" is defined in 40 CFR 230.3(q) to mean "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." Examples of specific steps that may be taken to minimize adverse impacts are set forth in 40 CFR Part 230, Subpart H.

3.2 Washington State and Local Requirements

MTCA (Chapter 70.105D RCW) authorized Ecology to adopt cleanup standards for remedial actions at sites where hazardous substances are present. The processes for identifying, investigating, and cleaning up these sites are defined and cleanup standards are set for groundwater, soil, surface water, and air in Chapter 173-340 WAC. The levels for cleanup of contaminated sediments are determined under Chapter 173-204 WAC.

In addition to MTCA, potential state requirements are specified in several statutes, codified in the Revised Code of Washington (RCW), and regulations promulgated in the WAC.

Washington Sediment Management Standards (Chapter 173-204 WAC). The SMS establish numerical values for chemical constituents in sediments. The SMS sets forth a sediment cleanup decision process for identifying contaminated sediment areas and determining appropriate cleanup responses. The SMS governs the identification and cleanup of contaminated sediment sites and establishes two sets of numerical chemical

criteria against which surface sediment concentrations are evaluated. The more conservative sediment quality standard (SQS) provides a regulatory goal by identifying surface sediments that have no adverse effects on human health or biological resources. The SQS is Ecology's preferred cleanup standard, though Ecology may approve an alternate cleanup level within the range of the SQS and the Minimum Cleanup Level (MCUL), if justified by a weighing of environmental benefits, technical feasibility, and cost. Numerical SQS and MCUL chemical criteria have not yet been developed for freshwater sediments.

State Environmental Policy Act (SEPA) (RCW 43.21C; WAC 197-11). The SEPA is intended to ensure that state and local government officials consider environmental values when making decisions. The SEPA process begins when an application for a permit is submitted to an agency, or an agency proposes to take some official action such as implementing a MTCA CAP. Prior to taking any action on a proposal, agencies must follow specific procedures to ensure that appropriate consideration has been given to the environment. The severity of potential environmental impacts associated with a project determines whether a SEPA is required.

Washington Water Pollution Control Act (Chapter 90.48 RCW; Chapter 173 201A WAC). The Water Pollution Control Act provides for the protection of surface water and groundwater quality. Chapter 173-201A WAC establishes water quality standards for surface waters of the state. Consistent with the requirements of Chapter 90.48 RCW, Ecology issues a water quality certification for any activity, including MTCA cleanup actions, requiring a federal permit for discharge to navigable state waters.

Washington Shoreline Management Act (Chapter 90.58 RCW; Chapter 173-14 WAC). The Shoreline Management Act and regulations promulgated thereunder establish requirements for substantial developments occurring within water areas of the state or within 200 feet of the shoreline. Local shoreline management plans are adopted under state regulations, creating an enforceable state law.

Washington Hydraulics Code (Chapter 75.20 RCW; Chapter 220 110 WAC). The Washington Hydraulics Code establishes requirements for performing work that would use, divert, obstruct, or change the natural flow or bed of any salt or fresh waters. Shoreline

excavation, dredging, and/or capping actions would likely be required to meet the substantive requirements of a Hydraulic Project Approval (HPA) permit under this state regulation.